

# ST.CHARLES COLLEGE OF EDUCATION, MADURAI

## MATHEMATICS LESSON PLAN - MODEL

**Name of the student-teacher** :  
**Name of the Guide teacher** :  
**Name of the school** :  
**Date** :  
**Class and Section** : IX - A  
**Subject** : Mathematics  
**Unit - 1** : Mensuration  
**Topic** : Surface area and Volume of the cube  
**Time** : 40 minutes

**Instructional objectives:** The pupil

1. Identifies the different mathematical shapes.
2. Discusses the definition in pairs
3. Recalls the formulae on area and volume of the cube
4. Recognizes cube and its LSA and TSA.
5. writes the formula for LSA and TSA of the cube
6. Identifies the value in the given problem
7. Explains the relationship between the area and the volume of the cube.
8. Demonstrates the volume of the cube by using real cube shaped objects
9. Computes the problems with speed and accuracy.
10. Formulates the problems on their own.

**Instructional resources:**

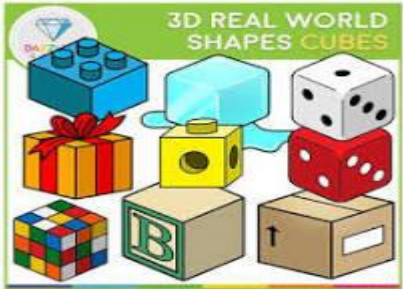
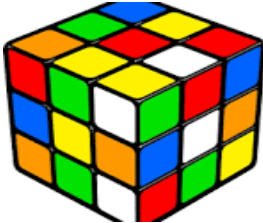
1. Model of a cube

2. Solid objects related to cube shape
3. Charts and Pictures depicting cube


### Previous knowledge of learners



The Teacher asks the few questions about shapes to check the previous knowledge of the students.

1. How many sides are there in a cube?
2. Name some of the cube shape objects.
3. What is the area of the square?

| <b>Content/Concept</b>  | <b>Specification of Behavioural Objectives</b> | <b>Learning Experiences (Teacher/Learner activities)</b>  | <b>Evaluation</b>                 |
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| <p><b>Lateral Surface Area (LSA) of the cube.</b></p> <p><i>The Lateral Surface Area of a cube is the area of all the sides of the cube excluding area of its base and top.</i></p> | <p>Defines</p> <p>Discusses</p>                | <p>The teacher defines the Lateral Surface Area of the cube.</p> <p>The Lateral Surface Area of a cube is the area of all the sides of the cube excluding area of its base and top</p> <p>Students discuss the definition in pairs.</p> | <p>Define LSA of the cube.</p>    |
| <p><b>Models of the cube</b></p>   | <p>Recognizes</p>                              | <p>The teacher shows some models and asks to find out the LSA</p>  <p>Students handle the model of the cube and recognize its LSA.</p>             | <p>What is the shape of this?</p> |

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| <p><b>Formula for LSA of the cube</b><br/> <math>= 4a^2 \text{ sq. units}</math></p>   | <p>Explains</p> <p>Writes</p>                                       | <p>The teacher explains the steps involved in the deriving the formula.</p> <p><math>= 4 \times \text{area of each sides}</math><br/> <math>= 4a^2 \text{ square units}</math></p> <p>Where 'a' is the side of the cube.</p> <p>Students write the formula for LSA of the cube in their note book.</p>   | <p>What is the formula of LSA of cube?</p>   |
| <p><b>Find the LSA of the Cube if the side is 5 cm?</b><br/> Given a = 5cm<br/> The LSA of the cube<br/> <math>= 4a^2</math><br/> <math>= 4 \times 5^2</math><br/> <math>= 4 \times 25</math><br/> <math>= 100 \text{ cm}^2</math></p> | <p>Reads</p> <p>Identifies</p> <p>Substitutes</p> <p>Calculates</p> | <p>The teacher reads the problem.<br/> Students identify the value of 'a' in the given problem.</p> <p>The teacher substitutes the value of the 'a' in the blackboard.</p> <p><b>Computation of the problems</b><br/> <math>= 4a^2</math><br/> <math>= 4 \times 5^2</math><br/> <math>= 4 \times 25</math><br/> <math>= 100 \text{ cm}^2</math></p> <p>Students calculate the LSA of the cube in their notebook.</p> | <p>Identify the Value of 'a' in the given problem.</p> <p>Calculate LSA of the cube if the side is 6 cm.</p> |
| <p><b>Total Surface Area (TSA) of the cube.</b><br/> The Total Surface Area of a cube is the area of all the sides of the cube including its base and top.</p>   | <p>Defines</p> <p>Discuss</p>                                       | <p>The teacher defines the Total Surface Area of the cube.</p> <p>The Total Surface Area of a cube is the area of all the sides of the cube including its base and top</p> <p>Students discuss the definition and copied in</p>  | <p>Define TSA of the cube.</p>   |

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|   |   | their note book.   |   |
| <p><b>Formula for TSA of the cube</b><br/> <math>= 6a^2 \text{ sq. units}</math></p>  | <p>Demonstrates</p> <p>Explains</p> <p>Writes</p> | <p>The teacher demonstrates the TSA of the cube by unfolding the cube shape box</p>  <p>The students unfold the given cube shaped box.</p> <p>The teacher explains the Formula for TSA of the cube.</p> <p><math>=</math> The sum of the areas of all the six equal faces of the cube.<br/> <math>= 6 \times a^2</math><br/> <math>= 6a^2 \text{ sq. units.}</math></p> <p>Students write the formula for TSA of the cube in their Note book.</p> | <p>Count the number of sides in the given cube.</p> <p>Write the formula for TSA of the cube.</p> |
| <p><b>Find the TSA of the Cube if the side of the cube is 7cm?</b><br/> Given: <math>a = 7</math>,<br/> The TSA of the Cube <math>= 6a^2</math><br/> <math>= 6 \times 7^2</math><br/> <math>= 6 \times 49</math><br/> <math>= 294 \text{ cm}^2</math></p> | <p>Simplifies</p> <p>Summarizes</p>               | <p>Students do the simplification on the black board.</p> <p><b>Computation of the problems</b></p> <p>The TSA of the Cube <math>= 6a^2</math><br/> <math>= 6 \times 7^2</math><br/> <math>= 6 \times 49</math><br/> <math>= 294 \text{ cm}^2</math></p> <p>The teacher summarizes the steps involved in the derivation.</p>   | <p>Simplify the Given Problem.</p>  |
| <p><b>Comparison of LSA And TSA of the cube</b><br/> <math>LSA = 4a^2 \text{ sq. units}</math><br/> <math>TSA = 6a^2 \text{ sq. units}</math></p>   | <p>Compares</p>                                   | <p>The teacher compares the LSA and TSA of the cube by Explaining its sides.</p> <p><b><math>LSA = 4a^2 \text{ sq. units}</math></b></p>   | <p>Compare LSA and TSA of the cube.</p>   |

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|   |  | <p><b>TSA = 6a<sup>2</sup>sq.units</b></p> <p>Students discuss the definition in pairs and copied in their note book</p>   |                                       |
| <p><b>Volume of the cube:</b></p> <p>The number of unit cubes required to fill the entire cube.</p> <p>Real cube shape objects</p>   | <p>Defines</p> <p>Writes</p> <p>Demonstrates</p> | <p>The teacher defines the volume of the cube.</p> <p><b>The volume of a cube is defined as the total number of cubic units occupied by the cube completely</b></p> <p>Students write the volume of the cube in their note book.</p> <p>The teacher demonstrates the volume of the cube by using real cube shaped objects.</p>  <p>Students demonstrate the Volume of the cube by using Real cube shaped objects.</p> | <p>Define the Volume of the cube.</p> |
| <p><b>Find the volume of the cube if the side of the cube is 6cm?</b></p> <p>The volume of the cube</p> <p><b>Is <math>a^3 = a \times a \times a</math></b></p> <p><b>Given <math>a = 6</math></b></p> <p><b><math>= 6 \times 6 \times 6</math></b></p> <p><b><math>= 216\text{cm}^3</math></b></p> | <p>Selects</p> <p>Computes</p>                   | <p>Student writes the appropriate formula in the blackboard.</p> <p><b>Computation of the problems</b></p> <p>Given <math>a = 6</math></p> <p><math>= 6 \times 6 \times 6</math></p> <p><math>= 216\text{cm}^3</math></p> <p>The teacher helps the students to compute the problem.</p>  | <p>Find the volume of The cube?</p>   |
| <p><b>Important points of the Topic</b></p>   | <p>Summarizes</p>                                | <p>The teacher summarizes the important points of the topic by asking following questions.</p>   |                                       |

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| <ul style="list-style-type: none"> <li>✓ Lateral Surface Area (LSA) of the cube</li> <li>✓ Formula for LSA</li> <li>✓ Total Surface Area</li> <li>✓ Formula for TSA of the cube</li> <li>✓ Comparison of LSA &amp; TSA</li> <li>✓ Volume of the cube</li> </ul> |  | <ul style="list-style-type: none"> <li>✓ What is the Lateral Surface Area (LSA) of the cube?</li> <li>✓ Give the Formula for LSA</li> <li>✓ What is Total Surface Area of cube?</li> <li>✓ Tell the Formula for TSA of the cube</li> <li>✓ Compare the LSA &amp; TSA</li> <li>✓ State the Volume of the cube?</li> </ul> |  |
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**Homework:**

1. Find the Lateral Surface Area (LSA), Total Surface Area (TSA) and volume of the Cube having their sides as 8 cm.
2. If the Total Surface Area of a cube is  $1014\text{cm}^2$ , find the length of its side

**Name of the Student-Teacher**

**Signature of the Guide Teacher**